

Page 1 of 27

Report No.: HK2308213798-E

FCC Test Report

Test Report On Behalf of Fujian Zongtian Network Technology Co., Ltd For Drones for Kids with Transmitter Model No.: NO.SQN-047

FCC ID: 2BCTO-NOSQN047

Prepared For:

Fujian Zongtian Network Technology Co., Ltd

Room 801, Building 6, Rongbang Center, Cangshan District, Fuzhou City, Fujian Province, China

Prepared By:

Shenzhen HUAK Testing Technology Co., Ltd.

1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

 Date of Test:
 Aug. 21, 2023 ~ Sept. 07, 2023

 Date of Report:
 Sept. 07, 2023

 Report Number:
 HK2308213798-E

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com



АР АР

Test Result Certification

Applicant's Name:	Fujian Zongtian Network Technology Co., Ltd
Address:	Room 801, Building 6, Rongbang Center, Cangshan District, Fuzhou City, Fujian Province, China
Manufacture's Name	Fujian Zongtian Network Technology Co., Ltd
Address:	Room 801, Building 6, Rongbang Center, Cangshan District, Fuzhou City, Fujian Province, China
Product Description	
Trade Mark:	Amiline
Product Name:	Drones for Kids with Transmitter
Model and/or Type Reference:	NO.SQN-047
Standards	FCC Rules and Regulations Part 15 Subpart C Section 15.249 ANSI C63.10: 2013
This publication may be reprodu the Shenzhen HUAK Testing Te source of the material. Shenzhe	uced in whole or in part for non-commercial purposes as long as echnology Co., Ltd. is acknowledged as copyright owner and en HUAK Testing Technology Co., Ltd. takes no responsibility for damages resulting from the reader's interpretation of the
Date of Test	
Date (s) of Performance of Tests	S Aug. 21, 2023 ~ Sept. 07, 2023
Date of Issue	Sent 07 2023

Test Result

Pass

Testing Engineer

Jan

(Gary Qian)

Technical Manager :

en

(Eden Hu)

Authorized Signatory :

ason Uwu

(Jason Zhou)

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com

HUAK TESTING

Page 3 of 27

NG

IK Per

Table of	Contents	Page
1. Test Summary		5
1.1 Test Procedures and Results		5
1.2 Information of the Test Laborato	ory must result	HUM 5
1.3 Measurement Uncertainty		5
2. General Information		6
2.1 General Description of EUT		HUAK TESTIC 6
2.2 Carrier Frequency of Channels		7
2.3 Operation of EUT during Testing		7
2.4 Description of Test Setup		8
2.5 Description of Support Units		9
2.5 Measurement Instruments List		10
3 . Conducted Emissions Test		11500
3.1 Conducted Power Line Emission	n Limit	11
3.2 Test Setup		11
3.3 Test Procedure		11
3.4 Test Result		12
4. Radiated Emission Test		13
4.1 Radiation Limit		13
4.2 Test Setup		13
4.3 Test Procedure		14
4.4 Test Result		14
5. Band Edge		20
5.1 Limits		20
5.2 Test Procedure		20
5.3 Test Result		21
6. Occupied Bandwidth Measuremen	nt	23
6.1 Test Setup		23
6.2 Test Procedure		23
6.3 Measurement Equipment Used		23
6.4 Test Result		23
7. Antenna Requirement		25
8. Photographs of Test		26
9. Photos of the EUT		27

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.



Т 691

** Modified History **

Revision	Description	Issued Data	Remark
Revision 1.0	Initial Test Report Release	Sept. 07, 2023	Jason Zhou
- NG	Blan Blan	anG and	G JUNG

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com/

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com



1. Test Summary

1.1 Test Procedures and Results

DESCRIPTION OF TEST	SECTION NUMBER	RESULT
CONDUCTED EMISSIONS TEST	15.207	N/A
RADIATED EMISSION TEST	15.249(a)/15.209	COMPLIANT
BAND EDGE	15.249(d)/15.205	COMPLIANT
OCCUPIED BANDWIDTH MEASUREMENT	15.215(c)	COMPLIANT
ANTENNA REQUIREMENT	15.203	COMPLIANT

1.2 Information of the Test Laboratory

Shenzhen HUAK Testing Technology Co., Ltd. Add.: 1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Testing Laboratory Authorization:

A2LA Accreditation Code is 4781.01. FCC Designation Number is CN1229. Canada IC CAB identifier is CN0045. CNAS Registration Number is L9589.

1.3 Measurement Uncertainty

Conducted Emission Expanded Uncertainty				
Radiated emission expanded uncertainty(9kHz-30MHz)				
Radiated emission expanded uncertainty(30MHz-1000MHz)				
Radiated emission expanded uncertainty(Above 1GHz)				

- = 2.71dB, k=2
- = 3.90dB, k=2
- = 3.90dB, k=2
 - = 4.28dB, k=2

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.

HUAK TESTING

FICATION

2. General Information

2.1 General Description of EUT

Equipment:	Drones for Kids with Transmitter	r O ^{nor}	OHUM
Model Name:	NO.SQN-047	STING	
Series Model:	N/A	HUAK	TESTING
Model Difference:	N/A		O HUM
FCC ID:	2BCTO-NOSQN047	IK TESTING	
Antenna Type:	Internal antenna	TESTIN	G TESTING
Antenna Gain:	0dBi	CO HUAN	O HUM
Operation Frequency:	2405-2475MHz		
Number of Channels:	71CH	TING	TING
Modulation Type:	GFSK	HUAKTED	HUAKTES
Power Source:	DC 4.5V from battery		
Power Rating:	DC 4.5V from battery	MAXTESTING	and
1627 (SA)	162	(1910) V V	165

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com

HUAN	HUM	Description	of Channel:	HUAN	O HU.
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2405	24	2429	48	2453
1	2406	25	2430	49	2454
^{m^G} 2	2407	26	2431	50	2455
3	2408	27	2432	51	2456
4	2409	28	2433	52	2457
5	2410	29	2434	53	2458
6	2411	30	2435	54	2459
HUAN 7 🔘	2412	31	2436	55	2460
8	2413	32	2437	56	2461
9	2414	33	2438	57	2462
10	2415	34	2439	58	2463
11	2416	35	2440	59	2464
12	2417	36	2441	60	2465
13	2418	37	2442	61	2466
14 🤍	2419	38	2443	62	2467
15	2420	39	2444	63	2468
16	2421	40	2445	64	2469
17 🤍	2422	41	2446	65	2470
18	2423	42	2447	66	2471
19	2424	43	2448	67	2472
20	2425	44	2449	68	2473
21	2426	45	2450	69	2474
22	2427	46	2451	70	2475
23	2428	47	2452	/	HUAK

2.2 Carrier Frequency of Channels

2.3 Operation of EUT during Testing

Operating Mode The mode is used: **Transmitting mode** Low Channel: 2405MHz Middle Channel: 2440MHz

High Channel: 2475Hz

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.



2.4 Description of Test Setup

Operation of EUT during Radiation Testing:

EUT

The sample was placed (0.8m below 1GHz, 1.5m above 1GHz) above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages. The worst case is X position.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.

TEL:+86-755 2302 9901 FAX:+86-755 2302 9901 E-mail: service@cer-mark.com



2.5 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

	JAN	m lar	nd pro-	- MAR	m ph	all and
	Item	Equipment	Trade Mark	Model/Type No.	Specification	Note
54	ESTING	Drones for Kids with Transmitter	Amiline	NO.SQN-047	N/A	EUT
		HUAKIL		HUAKTL	CO HUP	CIT.
G			TESTING	<i></i>	TESTING	
		ING STING	HUPP	TING	HUNN THE	STING
10	HUAKTES	HUAK	HUAK	ES. HUAK IL	HUAKTES	HUAK

Note:

- 1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test
- 2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.
- 3. For conducted measurements (Output Power, 6dB Emission Bandwidth, Power Spectral Density, Spurious Emissions), the antenna of EUT is connected to the test equipment via temporary antenna connector, the antenna connector is soldered on the antenna port of EUT, and the temporary antenna connector is listed in the Test Instruments.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com



2.5 Measurement Instruments List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
ak testine 1.	L.I.S.N. Artificial Mains Network	R&S	ENV216	HKE-002	Feb. 17, 2023	1 Year
2.	Receiver	R&S	ESR-7	HKE-005	Feb. 17, 2023	1 Year
3.	RF automatic control unit	Tonscend	JS0806-2	HKE-060	Feb. 17, 2023	1 Year
4.	Spectrum analyzer	R&S	FSP40	HKE-025	Feb. 17, 2023	1 Year
5.	Spectrum analyzer	Agilent	N9020A	HKE-048	Feb. 17, 2023	1 Year
6.	Preamplifier	Schwarzbeck	BBV 9743	HKE-006	Feb. 17, 2023	1 Year
7.	EMI Test Receiver	Rohde & Schwarz	ESR-7	HKE-010	Feb. 17, 2023	1 Year
8.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	HKE-012	Feb. 17, 2023	1 Year
9.	Loop Antenna	Schwarzbeck	FMZB 1519 B	HKE-014	Feb. 17, 2023	1 Year
10.	Horn Antenna	Schwarzbeck	9120D	HKE-013	Feb. 17, 2023	0 1 Year
11.	Pre-amplifier	EMCI	EMC051845S E	HKE-015	Feb. 17, 2023	1 Year
12.	Pre-amplifier	Agilent	83051A	HKE-016	Feb. 17, 2023	1 Year
13.	EMI Test Software EZ-EMC	Tonscend	JY3120-B Version	HKE-083	N/A	N/A
14.	Power Sensor	Agilent	E9300A	HKE-086	Feb. 17, 2023	1 Year
15.	Spectrum analyzer	Agilent	N9020A	HKE-048	Feb. 17, 2023	1 Year
16.	Signal generator	Agilent	N5182A	HKE-029	Feb. 17, 2023	1 Year
17.	Signal Generator	Agilent	83630A	HKE-028	Feb. 17, 2023	1 Year
18.	Shielded room	Shiel Hong	4*3*3	HKE-039	Dec. 09, 2021	3 Year
19.	Hight gain antenna	Schwarzbeck	LB-180400KF	HKE-054	Feb. 17, 2023	1 Year
20.	10dB Attenuator	Schwarzbeck	VTSD9561F	HKE-153	Feb. 17, 2023	1 Year

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com



3. Conducted Emissions Test

3.1 Conducted Power Line Emission Limit

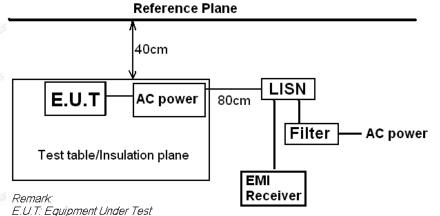
For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following.

F	M	Maximum RF Line Voltage (dBμV)			
Frequency (MHz)	CLAS	CLASS A		CLASS B	
(11112)	Q.P.	Ave.	Q.P.	Ave.	
0.15 - 0.50	79	66	66-56*	56-46*	
0.50 - 5.00	73	60	56	46	
5.00 - 30.0	73	60	60	50	

* Decreasing linearly with the logarithm of the frequency.

For intentional device, according to §15.207(a) Line Conducted Emission Limit is same as above table.

3.2 Test Setup



E.U.T: Equipment Under Test LISN: Line Impedence Stabilization Network Test table height=0.8m

3.3 Test Procedure

- 1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10.
- 2. Support equipment, if needed, was placed as per ANSI C63.10.
- 3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
- 4. If a EUT received DC power from the USB Port of Notebook PC, the PC's adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- 5. All support equipments received AC power from a second LISN, if any.
- 6. The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7. Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com



Report No.: HK2308213798-E

FICATION

3.4 Test Result

Not applicable. Note: EUT power supply by DC Power, so this test item not applicable.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com



4. Radiated Emission Test

4.1 Radiation Limit

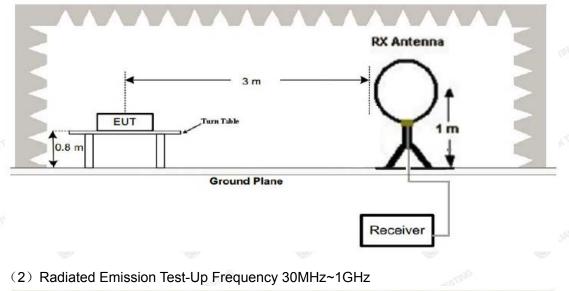
For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

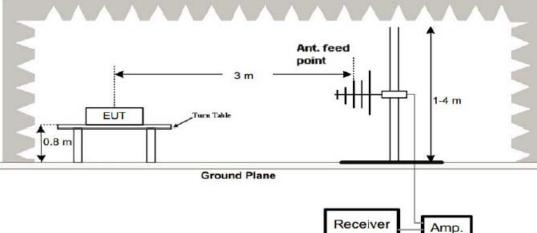
Turu oo.			
Frequency	Distance	Radiated	Radiated
(MHz)	(Meters)	(dBµV/m)	(µV/m)
0.009-0.490	300	20log 2400/F (kHz)	2400/F (kHz)
0.490-1.705	30	20log 24000/F (kHz)	24000/F (kHz)
1.705-30	30	20log 30	30
30-88	3	40	100
88-216	3	43.5	150
216-960	3	46	200
Above 960	3	54	500
		- CU- (1929)	

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

4.2 Test Setup

(1) Radiated Emission Test-Up Frequency Below 30MHz



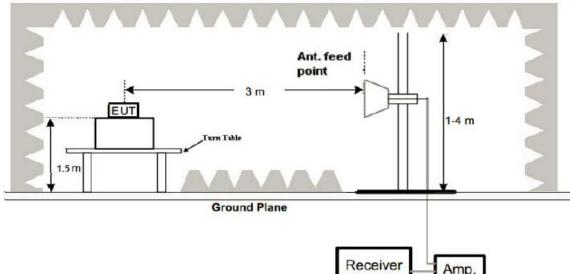


The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com



(3) Radiated Emission Test-Up Frequency Above 1GHz



4.3 Test Procedure

- 1. Below 1GHz measurement the EUT is placed on turntable which is 0.8m above ground plane. And above 1GHz measurement EUT was placed on low permittivity and low tangent turn table which is 1.5m above ground plane.
- 2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- 3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
- 4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 6. Repeat above procedures until the measurements for all frequencies are complete.
- 7. The test frequency range from 9KHz to 25GHz per FCC PART 15.33(a).

Note:

For battery operated equipment, the equipment tests shall be performed using a new battery.

4.4 Test Result

PASS

All the test modes completed for test. The worst case of Radiated Emission is CH 01; the test data of this mode was reported.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com



NG

¦К

Below 1GHz Test Results:



Suspe	cted List								
NO	Freq.	Factor	Reading	Level	Limit	Margin	Height	Angle	Delority
NO.	[MHz]	[dB]	[dBµV/m]	[dBµV/m]	[dBµV/m]	[dB]	[cm]	[°]	Polarity
1	35.825826	-15.82	25.33	9.51	40.00	30.49	100	273	Horizontal
2	56.216216	-14.40	25.17	10.77	40.00	29.23	100	61	Horizontal
3	111.56156	-15.07	25.41	10.34	43.50	33.16	100	55	Horizontal
4	276.62662	-12.55	25.35	12.80	46.00	33.20	100	11	Horizontal
5	542.67267	-6.47	24.79	18.32	46.00	27.68	100	240	Horizontal
6	822.31231	-1.40	26.18	24.78	46.00	21.22	100	42	Horizontal
									6

Remark: Factor = Cable loss + Antenna factor - Preamplifier; Level = Reading + Factor; Margin = Limit - Level;

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com/

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com



Report No.: HK2308213798-E



QP Detector

Suspe	cted List								
NO	Freq.	Factor	Reading	Level	Limit	Margin	Height	Angle	Delerity
NO.	[MHz]	[dB]	[dBµV/m]	[dBµV/m]	[dBµV/m]	[dB]	[cm]	[°]	Polarity
1	68.838839	-15.56	26.64	11.08	40.00	28.92	100	76	Vertical
2	79.51952	-17.40	28.86	11.46	40.00	28.54	100	137	Vertical
3	163.02302	-17.19	26.65	9.46	43.50	34.04	100	0	Vertical
4	199.91992	-15.27	29.93	14.66	43.50	28.84	100	189	Vertical
5	299.92993	-11.91	24.93	13.02	46.00	32.98	100	293	Vertical
6	670.84084	-4.16	24.95	20.79	46.00	25.21	100	335	Vertical

Remark: Factor = Cable loss + Antenna factor - Preamplifier; Level = Reading + Factor; Margin = Limit - Level;

Harmonics and Spurious Emissions

Frequency Range (9 kHz-30MHz)

	Frequency (MHz)	Level@3m (dBµV/m)	Limit@3m (dBµV/m)
3-	O HUAN	HUAR	HUNK HUNK
GNG			
	-stale	KTES .	HUAN TES
	HUNK IT	HUART	HUAK

Note: 1. Emission Level=Reading+ Cable loss+ Antenna factor-Amp factor.

2. The emission levels are 20 dB below the limit value, which are not reported. It is deemed to comply with the requirement.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com



Above 1 GHz Test Results: CH Low (2405MHz)

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detecto
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
2405	103.84	-5.84	98	114	-16	peak
2405	an ⁶⁰ 86.04	-5.84	80.2	94	-13.8	AVG
4810	54.31	-3.64	50.67	74	-23.33	peak
4810	41.63	-3.64	37.99	54	-16.01	AVG
7215	52.84	-0.95	51.89	74	-22.11	peak
7215	40.57	-0.95	39.62	54	-14.38	AVG

Vertical:						
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
2405	105.65	-5.84	99.81	114	-14.19	peak
2405	83.64	-5.84	77.8	94	-16.2	AVG
4810	54.15	-3.64	50.51	74	-23.49	peak
4810	46.08	-3.64	42.44	54	-11.56	AVG
7215	52.74	-0.95	51.79	74	-22.21	peak
7215	41.99	-0.95	41.04		-12.96	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier; Level = Reading + Factor; Margin = Level-Limit.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com



Limit.

IFICATION.

CH Middle (2440MHz)

requency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
2440	106.64	-5.71	100.93	114	-13.07	peak
2440	76.43	-5.71	70.72	94	-23.28	AVG
4880	53.12	-3.51	49.61	74	-24.39	peak
4880	43.05	-3.51	39.54	54	-14.46	AVG
7320	50.26	-0.82	49.44	74	-24.56	peak
7320	43.97	-0.82	43.15	54	-10.85	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier; Level = Reading + Factor; Margin = Level-Limit.

ertical:						
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
2440	104.33	-5.71	98.62	114	-15.38	peak
2440	82.64	-5.71	76.93	94	-17.07	AVG
4880	56.47	-3.51	52.96	74	-21.04	peak
4880	44.16	-3.51	40.65	54	-13.35	AVG
7320	53.97	-0.82	53.15	74	-20.85	peak
7320	42.57	-0.82	41.75	54	-12.25	AVG

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com



CH High (2475MHz)

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detecto
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
2475	106.12	-5.65	100.47	114	-13.53	peak
2475	81.63	-5.65	75.98	94	-18.02	AVG
4950	55.94	-3.43	52.51	74	-21.49	peak
4950	43.02	-3.43	39.59	54	-14.41	AVG
7425	51.09	-0.75	50.34	74	-23.66	peak
7425	41.84	-0.75	41.09	54	-12.91	AVG

Vertical:						
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
2475	106.22	-5.65	100.57	114	-13.43	peak
2475	81.64	-5.65	75.99	94	-18.01	AVG
4950	53.62	-3.43	50.19	74	-23.81	peak
4950	46.51	-3.43	43.08	54	-10.92	AVG
7425	51.38	-0.75	50.63	74	-23.37	peak
7425	43.57	-0.75	42.82	54	-11.18	AVG

Remark :

(1) Measuring frequencies from 1 GHz to the 25 GHz.

(2) "F" denotes fundamental frequency; "H" denotes spurious frequency; "E" denotes band edge frequency.

(3) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.

(4)The emissions are attenuated more than 20dB below the permissible limits are not record in the report. (5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.

(6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dBuV/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dBuV/m(PK Value) <54 dBuV/m(AV Limit), the Average Detected not need to completed.

(7) All modes of operation were investigated and the worst-case emissions are reported.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.



5. Band Edge

5.1 Limits

FCC PART 15.249(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

5.2 Test Procedure

The band edge compliance of RF radiated emission should be measured by following the guidance in ANSI C63.10 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization etc. Set RBW to 1MHz and VBM to 3MHz to measure the peak field strength and set RBW to 1MHz and VBM to 10Hz to measure the average radiated field strength. The conducted RF band edge was measured by using a spectrum analyzer. Set span wide enough to capture the highest in-band emission and the emission at the band edge. Set RBW to 1MHz and VBW to 3MHz, to measure the conducted peak band edge.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com



5.3 Test Result

PASS

Radiated Band Edge Test:

Operation Mode: TX CH Low (2405MHz)

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
2310	56.58	-5.81	50.77	74	-23.23	peak
2310	HUM	-5.81	() HOM	54	HUAN /	AVG
2390	55.34	-5.84	49.5	74	-24.5	peak
2390	TESING	-5.84	STNG /	54 st	I TESTING	AVG
2400	51.27	-5.84	45.43	74	-28.57	peak
2400	1	-5.84	/	54	STING /	AVG

Vertical:						
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
2310	57.88	-5.81	52.07	^{mo} 74	-21.93	peak
2310	HUAK /	-5.81	O HUNK .	54 🔊	1	AVG
2390	55.23	-5.84	49.39	74	-24.61	peak
2390	resting 1	-5.84	AK TESTING	54	/	AVG
2400	53.69	-5.84	47.85	74	-26.15	peak
2400		-5.84	/	54	/	AVG

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com





Operation Mode: TX CH High (2475MHz)

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector Turc
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
2483.50	54.14	-5.65	48.49	74	-25.51	peak
2483.50	TESTING /	-5.65	/ TESTING	54	1	AVG
2500.00	50.08	-5.65	44.43	74	-29.57	peak
2500.00	/	-5.65	/	54 MTS	1	AVG

Vertical:	2					
Frequency	Reading Result	Factor	Emission Level	Limits	Margin	- Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	
2483.50	56.17	-5.65	50.52	74	-23.48	peak
2483.50	1	-5.65	O HAR	54	/	AVG
2500.00	53.64	-5.65	47.99	74	-26.01	peak
2500.00	LIAK TESTING	-5.65	TSTING / JUNK TEST	54	TESTING	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier; Level = Reading + Factor; Margin = Level-Limit.

Remark: All the other emissions not reported were too low to read and deemed to comply with FCC limit.

Remark:

1. If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.

2. In restricted bands of operation, the spurious emissions below the permissible value more than 20dB.

3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com



6. Occupied Bandwidth Measurement

6.1 Test Setup

Same as Radiated Emission Measurement

6.2 Test Procedure

- 1. The EUT was placed on a turn table which is 0.8m above ground plane.
- 2. Set EUT as normal operation.
- 3. Based on ANSI C63.10 section 6.9.2: RBW= 10KHz. VBW= 30 KHz, Span=3MHz.
- 4. The useful radiated emission from the EUT was detected by the spectrum analyzer with peak detector.

6.3 Measurement Equipment Used

Same as Radiated Emission Measurement

6.4 Test Result

PASS

20dB Bandwidth (MHz)	Result
1.017	PASS
1.017	PASS
1.018	PASS
	(MHz) 1.017 1.017

CH: 2405MHz

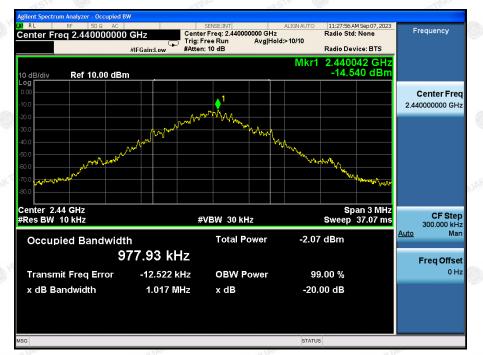


The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com



CH: 2440MHz



CH: 2475MHz



The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com



7. Antenna Requirement

Standard Applicable

HUAK TESTING

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

Antenna Connected Construction

30

80 90 1

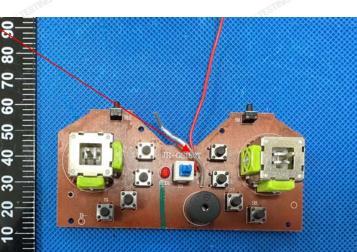
2

40 50 60

30

The antenna used in this product is a Internal antenna, need professional installation, not easy to remove. It conforms to the standard requirements. The directional gains of antenna used for transmitting is 0dBi.





∞ mm 0f 02 0£ 04 0∂ 09 07 08 0e 00f 0f 02 05 0 mm 0f 03 0£ 040 30 20 10 mm 0

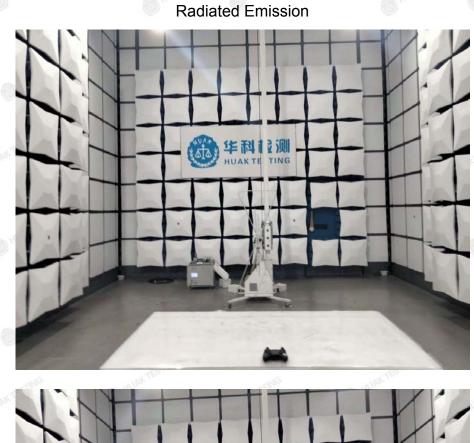
The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com

HUAK TESTING

Report No.: HK2308213798-E

8. Photographs of Test





The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com



PAT

9. Photos of the EUT

Reference to the report: ANNEX A of external photos and ANNEX B of internal photos.

----End of test report-----

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com